

REMARKS

Applicant requests favorable reconsideration of this application in view of the foregoing amendments and the following remarks. Claims 1-9 were pending in the application and were rejected in the Office Action. By way of this amendment, Applicant has: (a) amended claims 1, 4, and 7; and (b) added new dependent claims 10-12. Accordingly, claims 1-12 remain pending for further consideration.

1. Objection to Claims 7-9

The Examiner objected to claims 7-9 based on an inconsistency that has been fully obviated by way of the amendments made herein to claim 7 (*i.e.*, the claim from which claims 8 and 9 depend). Accordingly, a withdrawal of this objection is both warranted and earnestly solicited.

2. Rejection of Claims 1-9

The Examiner rejected claims 1-9 under 35 U.S.C. § 102(a) as allegedly being anticipated by U.S. Patent No. 6,671,470 ("Suzuki"). For the following reasons, Applicant respectfully traverses this rejection.

As amended herein, claim 1 (*i.e.*, the claim from which claims 2 and 3 depend) recites a fixing apparatus that includes, among other possible things (*italic emphasis added*):

- a heating member;
- a coil configured to apply a high frequency magnetic field for induction heating to the heating member;
- a high-frequency wave generating circuit that has a switching element and that is configured to generate high frequency power for generating the high frequency magnetic field from the coil by ON-OFF driving the switching element;
- a temperature sensor configured to detect a temperature T of the heating member;
- a detection section configured to detect an amount of upward or downward variation per unit time of the temperature T detected by the temperature sensor; and
- an output control section configured to increase or decrease an ON-OFF duty of the switching element by an amount corresponding to a result of detection by the detection section, while holding the detected temperature T detected by the temperature sensor within an initially set range,

wherein the output control section is configured to determine: (a) which of a plurality of temperature ranges, including the initially set range, the detected temperature T falls within; and (b) the ON-OFF duty of the switching element in accordance with the result of the temperature range determination and the variation detected by the detection section.

Similarly, as amended, claim 4 (*i.e.*, the claim from which claims 5 and 6 depend) recites a fixing apparatus that includes, among other possible things (*italic emphasis added*):

a heating member;
a coil for induction heating which is positioned near the heating member;
a resonance circuit including the coil as a constituent element;
a switching element configured to excite the resonance circuit;
an oscillator configured to output an ON-OFF signal for ON-OFF driving of the switching element;
a temperature sensor configured to detect a temperature T of the heating member;
a detection section configured to detect an amount of variation per unit time of the temperature T detected by the temperature sensor;
and
an output control section configured to increase or decrease the duty of the ON-OFF signal outputted from the oscillator by a value corresponding to a result of detection by the detection section, while holding the detected temperature T detected by the temperature sensor within an initially set range,

wherein the output control section is configured to determine: (a) which of a plurality of temperature ranges, including the initially set range, the detected temperature T falls within; and (b) the duty of the ON-OFF signal in accordance with the result of the temperature range determination and the variation detected by the detection section.

As amended, claim 7 (i.e., the claim from which claims 8 and 9 depend) similarly recites an image forming apparatus that includes, among other possible things (italic emphasis added):

a heating member;
a coil configured to apply a high frequency magnetic field for induction heating to the heating member;
a high-frequency wave generating circuit that has a switching element and that is configured to generate high frequency power for generating the high frequency magnetic field from the coil by ON-OFF driving the switching element;
a temperature sensor configured to detect a temperature T of the heating member;
a detection section configured to detect an amount of upward or downward variation per unit time of the temperature T detected by the temperature sensor; and
an output control section configured to increase or decrease an ON-OFF duty of the switching element by an amount corresponding to a result of detection by the detection section, while holding the detected temperature T detected by the temperature sensor within an initially set range,

wherein the output control section is configured to determine: (a) which of a plurality of temperature ranges, including the initially set range, the detected temperature T falls within; and (b) the ON-OFF duty of the switching element in accordance with the result of the temperature range determination and the variation detected by the detection section.

As hereafter explained, Suzuki fails to teach or suggest the fixing apparatuses recited in claims 1 and 4 or the image forming apparatus recited in claim 7.

Suzuki teaches, as the Examiner indicates, a temperature control system that includes a temperature sensor 26. *See* Suzuki at col. 10, lines 18-59. Suzuki's temperature control system, however, does not categorize a detected temperature as falling within one of a plurality of predetermined temperature ranges. Correspondingly, Suzuki's temperature control system also does not determine an ON-OFF duty cycle based on (and in conjunction with a monitored temperature variation ($\Delta T/\Delta t$)) which of the predetermined temperature ranges includes the detected temperature. As a result, Suzuki fails to teach or suggest at least the above-italicized limitations of claims 1, 4, and 7.

As Suzuki fails to teach or suggest each of the limitations of claims 1, 4, and 7, Suzuki can not be used to reject these claims, or any claim dependent thereon, under 35 U.S.C. § 102(a). Moreover, as claims 2 and 3 depend from claim 1, as claims 5 and 6 depend from claim 4, and as claims 8 and 9 depend from claim 7, each of these dependent claims is also allowable over Suzuki, without regard to the other patentable limitations recited therein. Accordingly, a withdrawal of the rejection of claims 1-9 under 35 U.S.C. § 102(a) is both warranted and earnestly solicited.

3. New Claims 10-12

New claims 10-12 respectively depend from claims 1, 4 and 7. Accordingly, new claims 10-12 are allowable for at least the same reasons as claims 1, 4, and 7 and without regard to the other patentable limitations recited therein.

CONCLUSION

Claims 1-12 are in condition for allowance. A Notice of Allowance at an early date is respectfully requested. The Examiner is invited to contact the undersigned if such communication would expedite the prosecution of the application.

Date January 19, 2006
Customer Number: 22428
FOLEY & LARDNER LLP
3000 K Street, N.W., Suite 500
Washington, D.C. 20007-5143
Telephone: (202) 672-5300
Facsimile: (202) 672-5399

Respectfully submitted,

By 

Pavan K. Agarwal
Registration No. 40,888
Frederic T. Tenney
Registration No. 47,131
Attorneys for Applicant

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AMENDMENTS TO THE DRAWINGS

Figure 3 has been amended to replace reference numeral “30” (which is indicative of the main controller) with reference numeral “40” (which is indicative of the print controller).

See Fig. 2.

Figure 5 has been amended to replace reference numeral “104” (which is indicative of the inquiry $T_b \geq T > T_c$?) with reference numeral “102”. *See p. 9, line 5; see also Fig. 6.*

Figure 6 has been amended to edit step 121 to read: $(\Delta T / \Delta t) = 0$? *See p. 12, line 4.*